ROLL NO. _____

Code: AE66/AC66/AT66 Subject: MICROPROCESSORS & MICROCONTROLLERS

AMIETE – ET/CS/IT

Time: 3 Hours **DECEMBER 2014** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. Sign magnitude notation of +7 and -5 is

(A) 0111 and 1101 **(B)** 1111 and 1101
(C) 0101 and 1111 **(D)** 0101 and 0111

b. LS byte portion of 16 bit address is received in _____ register.

(A) W **(B)** A
(C) Z **(D)** None of these

c. Which interrupt has the second highest priority among the following.

(A) TRAP **(B)** RST 7.5
(C) RST 5.5 **(D)** INTR

d. What should be the input to common anode type seven segment display interface to display character 3.

(A) ODH **(B)** BDH
(C) OOH **(D)** DOH

e. 8 bit slave register is used in

(A) 8255 **(B)** 8085
(C) 8259 **(D)** None of these

f. In asynchronous transmission mode the transmission of characters is done at

(A) Regular intervals **(B)** Irregular intervals
(C) Synchronised with the clock **(D)** None of these

g. To which mode 8253 should be configured to make it work as a square wave generator

(A) mode 1 **(B)** mode 2
(C) mode 3 **(D)** mode 0

h. In 8085 name the 16 bit registers

(A) SP **(B)** PC
(C) IR **(D)** Both **(A) & (B)**

i. 8085, is reset by placing a logic 0 on RESET-IN pin for atleast _____after power is supplied to Vcc pin

(A) 0.5 μs **(B)** 0.5 ms
(C) 0.5 s **(D)** 0.5 ns

j. Which addressing mode is not supported by 8051 microcontroller.

(A) Register Addressing **(B)** Implied Addressing
(C) Indexed Addressing **(D)** Absolute Addressing

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain with example the following set of instructions: **(4)**
(i) MVI M, d8 (ii) LDAX r_p (iii) XCHG (iv) STAX r_p

b. Explain different flag registers present in 8085. **(4)**

c. Discuss different stack operation instructions of 8085. (any four) **(8)**

Q.3 a. Differentiate between CALL and JUMP instruction of 8085 and mention various conditional call instructions. **(8)**

b. Explain the instruction cycle steps in 8085 microprocessor. **(8)**

Q.4 a. Write an 8085 assembly language program to exchange 10 bytes of data stored from location x with 10 bytes of data stored from location y. **(8)**

b. Write 8085 assembly language program along with flow chart to find the smallest of N 1-byte numbers. The N value is provided at location X, and the no's are present from location X+1. Display the smallest no in data field and its location in address field. **(8)**

Q.5 a. Explain in detail status check data transfer scheme with the help of a flow chart. **(8)**

b. With necessary waveforms, explain the need for INTR and INTA* pins and action taken by 8085 when INTR pin is activated. **(8)**

Q.6 a. Discuss the following w.r.t. 7 segment display interface: **(6)**
(i) Layout of 7 segment display
(ii) Internal circuitry of 7 segment common anode display
(iii) Condition for glowing of a LED.

b. Give the description of matrix keyboard interface. **(6)**

c. Explain the following pins w.r.t. INTEL 8279 **(4)**
(i) C / $\overline{D}$ (ii) RD* (iii) Shift (iv) B_{3-0}

Q.7 a. Explain all the registers used in 8259. **(8)**

b. What is DMA? Explain the need for DMA data transfer. **(4)**

c. Mention the conditions for the following modes w.r.t. 8257 **(4)**
(i) When processor is the master & 8257 is slave.
(ii) When processor is in HOLD state & 8257 is in master mode.

Q.8 a. Explain the status port of 8251. **(8)**

b. Explain the internal architecture of 8253. **(8)**

Q.9 a. Write the simplified block diagram of 8051 microcontroller. **(8)**

b. Explain internal RAM organization of 8051. **(8)**